Discriminatory Behaviour: Issues Related to Theory and Measurement

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"The existing village system has the effect of making the Scheduled Castes in the village slaves of the caste Hindus . . . Under the village system the Scheduled Castes are not allowed to live inside the village. They have to live on the outskirts . . . They have no independent means of livelihood. They own no land . . . They have to do forced labour day in and day out on pain of being driven away from their quarters by the Hindu landlords . . . They have to live a life of degradation, dishonour and ignominy from generation to generation. It is a state of eternal perdition."
Dr Ambedkar's comment in the Constituent Assembly in 1947 on the 'Status of the Untouchable Castes in the Indian Village'.

1. INTRODUCTION

Discrimination may be pithily described as the "unequal treatment of equals". More accurately, it represents a situation wherein individuals are treated and judged—for better or for worse—in terms of their membership of a group rather than in terms of their individual personal qualities. This begs the question as to why discrimination occurs at all. How might it be modelled? How might it be measured? All these questions are addressed in this paper.

However, even before broaching such questions, we need to explore the prior question of why we—along with a large number of academics, journalists, and policy-makers—should be concerned with the issue of discrimination at all? What does it matter if a group of individuals is discriminated against? What harm does discrimination inflict? On the person concerned? On society at large?

The short answer is that discrimination fosters *social exclusion*. The term 'social exclusion', which means the process by which certain groups are unable to fully participate in the lives of their communities, which has concomitant consequences—has, since its origins in the writings of René Lenoir (1974), spawned a vast and eclectic body of literature, as the list of things that people might be excluded from has mushroomed. Silver (1995), for example, itemises some of these factors: *inter alia* livelihood; secure, permanent employment; earnings; property; credit; land; housing; education, skills, and cultural capital; the welfare State. The basis on which people are excluded also comprises a long list (see DFID, 2005): age, caste, gender, disability, ethnic background, HIV status, migrant status, religion, sexual orientation. Such an uncontrolled proliferation of items has invited inevitable criticism from some experts in poverty and development, epitomised by Oysen's (1997) dismissal of social integration/exclusion as "an umbrella concept for which there is limited theoretical underpinning".

More recently, Sen (2000) attempted to inject some rigour into the concept of social exclusion. He began by observing that, in the tradition initiated by Aristotle, and continued by Adam Smith (1776), poverty should properly be viewed in terms of 'poor living' rather than simply 'low income'. From the

former perspective, poverty is a multi-dimensional concept, embracing the following characteristics: low income; bad, or no, employment; illiteracy or, at best, low levels of education; poor health and access to healthcare; and most generally, difficulty experienced in taking part in the life of the community.[1]

Against this backdrop of a multi-dimensional view of poverty, Sen (2000) argued that the function of the concept of social exclusion was not to widen or otherwise alter our concept of poverty but, rather, to highlight the relational aspects and processes which underpin poverty. Thus, the following critical issues need to be addressed before any judgement can be passed on the usefulness of social exclusion as a concept: (i) Does it contribute to our understanding of the nature and causes of poverty? (ii) Would our understanding be different if this concept did not exist? (iii) Does it enrich thinking about policies to alleviate poverty?

While answering this set of questions, Sen (2000) drew our attention to two features of social exclusion. The first is that exclusion is a *relational* concept referring to the lack of affinity between an individual and the wider community. Second, when the relation between social exclusion and poverty is being defined, a fundamental distinction needs to be made between exclusion being *constitutively* a part of deprivation and that being *instrumental* in causing deprivation. In its 'constitutive' interpretation, exclusion from some (or all) aspects of social functioning in itself, and of itself, constitutes an important aspect of deprivation. In the 'instrumental' interpretation, exclusion *per se* does not constitute deprivation but it is a cause of deprivation.

Some types of exclusion may form a constitutive part of deprivation but may not necessarily be instrumental in causing deprivation. For example, the denial of access to the village well to some families would not have consequences for them with respect to the water supply if these families had mains water supplied to their homes; however, being denied access itself might constitute deprivation as it is tantamount to robbing such families of a sense of 'belonging' to the village.[2] Conversely, other types of exclusion may not form a constitutive part of deprivation but might nevertheless be instrumental in causing deprivation: a denial of credit might not be shameful *per se* but might lead to deprivation through an inability to pursue business opportunities. More generally, social exclusion might have both constitutive and instrumental importance for deprivation.

[1] Or, as Adam Smith put it, 'an inability to appear in public without shame'.

[2] In another example, with the social status attached to being an owner-occupier in the UK and the USA, a lack of access to the mortgage market might involve enforced living in rented accommodation and consequently engender a 'feeling of shame'. However, if the quality of the owned and rented accommodation is not very different from owned accommodation, no further deprivation (in terms of low-quality housing) would follow.

A major instrument of social exclusion is discriminatory behaviour, whereby certain persons are excluded from important activities by virtue of their belonging to certain groups which, for whatever reason are regarded 'unfavourably'. In practical terms, discrimination may assume many forms and encompass several areas of life. In the Indian context, Thorat and Sabharwal (2009a and 2009b) detail many of the ways through which Dalits are discriminated against. In the context of the rural labour market, discrimination assumes the form of denial of work, as agricultural workers (reported in 36 per cent of the villages), ensuring that no touching takes place while paying wages (in 37 per cent of the villages), payment of lower wages for the same work (in 25 per cent of the villages), refusal to employ Dalit workers in house building (in 29 per cent of the villages); denial of access to irrigation facilities (in 33 per cent of the villages); and denial of access to grazing/fishing grounds (in 21 per cent of the villages). In this context, the purpose of this paper is to review the issues of discriminatory behaviour through an understanding of its theoretical underpinnings and by means of a critical appreciation of the different methods used to measure discrimination.

2. CONCEPTS OF DISCRIMINATION

Irrespective of whatever forms discrimination takes, its central form is the act of making a distinction between persons *categorically* rather than *individually*. This means that any difference in the treatment between persons is based on their group membership rather than on their relevant personal characteristics. Therefore, such difference in treatment constitutes discriminatory behaviour. This is the conventional definition of discrimination, which has also been adopted in this paper.

2.1 Legal View of Discrimination

Under the law, discrimination has the following two aspects:

1. The first relates to the identification of the groups, which are to be 'protected' against unequal treatment. The unequal treatment of equals amounts to 'discrimination' only if the aggrieved party belongs to a 'protected' group, gender, race, caste and religion. Otherwise, it is not considered discrimination.

2. The second relates to the issue of what constitutes unequal treatment. Here, we have to distinguish between *disparate treatment* and *disparate impact*. A particular action may amount to treating persons from different groups differently (disparate treatment) or it may amount to

treating them equally but may have a disparate impact on people from different groups. A related question is *business necessity*: is an organisation's action, which is allegedly discriminatory, essential for its functioning or is it of no relevance? In legal terms, a particular treatment qualifies as discrimination if it involves the following:

a. Disparate treatment of persons in protected groups, regardless of whether or not there is a business necessity; and

b. Adverse impact on persons in protected groups without business necessity.

2.2 Economists' View of Discrimination

The economists follow the lead of Becker (1971) when they define discrimination. According to him, "discrimination in the market place consists of voluntarily relinquishing profits in order to cater to prejudice." Defined in this sense, discrimination becomes the 'price' of prejudice. It is the price paid by those who indulge in their 'taste for discrimination' in terms of foregone profits. Some examples of the 'price of prejudice' are as follows:

1. A less qualified White person is chosen for a job over a more qualified Black person, as a result of which the employer forgoes the prospective higher profit that would accrue from employing the more qualified Black person.

2. A house owner rents his property at a lower rent to a White tenant in preference to a Black tenant who would pay a higher rent.

3. A bank gives loan to a less credit-worthy White customer but turns down a more credit-worthy Black person with the result that, as compared to the Black customer, the bank is prepared to accept a higher risk of default from the White customer.

If we accept Becker's view of discrimination as forgoing profits to satisfy a 'taste for prejudice', then one of the consequences of discrimination is that a better qualified Black applicant would be turned down in favour of a less qualified White applicant. Thus, the successful Black applicants, on an average, are 'better' than successful White applicants because they have had to meet a higher standard of compliance.

The implication of this situation is that if discriminatory practice prevails in markets, then *inter alia*:

1. The Black employees would be more productive than the White employees;

2. The Black tenants would pay a higher rent than the White tenants; and

3. The Black borrowers would exhibit a lower rate of default in repaying loans than the White borrowers.

If we do not observe these differences in outcomes between the groups, then there cannot be any discrimination in that market. This means that the decision-making agent is accepting the *same* standard of compliance (in terms of qualifications, rent, and credit risk) from the Black and the White employees.

2.3 Statistical Discrimination

Statistical or belief-based discrimination arises when prior belief (or knowledge) about the characteristics of the group to which an individual belongs is used to make inferences about the individual's characteristics (see Arrow, 1972a; 1972b; 1973; Phelps, 1972; Lundberg and Startz, 2007).

1. For example, if it is an employer's belief that on an average, the Black employees are less punctual than the White employees, she/he may take this fact into account when choosing between a Black and a White job applicant.
2. If it is a landlord's' belief that the average Black tenant is more troublesome than the average White tenant, she/he may take this fact into account when choosing between a Black and a White tenant.
3. If it is a bank manager's belief that the average default rates are higher for the Black as compared to the White borrowers, she/he may take this fact into account when choosing between a Black and a White applicant for loan**.**

Beliefs can also reflect prejudice through the propagation of negative stereotypes of certain groups. Under a *negative stereotype*, a prior negative belief about a group's average value of some relevant characteristic is used to assess the ability of all individuals who belong to this group. Therefore, the fact that on an average, a group scores poorly in a test is used to conclude that every member of that group would score poorly in that test or, more accurately, the likelihood of a member of that group scoring poorly is greater than the corresponding likelihood for a person who belongs to a group that has a higher average score.

Negative stereotypes about groups constitute a *different* type of prejudice from Becker's distaste for *all* individuals who belong to a certain group, regardless of their or their group's 'quality'. Under this proposition, assessment is done only with respect to the relevant task and does not imply any further

prejudice against the group. Thus, belief-based discrimination is a market-based explanation for discrimination, which does not require a taste for discrimination. Also, unlike taste-based discrimination, it does not require a sacrifice of profits. Indeed, if the prior belief is true, *profits are expected to go up* as a result of discrimination.

Belief-based discrimination about the average performance of a group penalises talented individuals from that group by ascribing to them the average quality of their group. Consequently, such discrimination can change the behaviour of a group. If the employer judges by means of a negative group stereotype, then there is no point in making human capital investments (relating to education, study, diligence, work habits, attitudes to work) since they will carry low (if not zero) rates of return. This argument is evident in the words of Elmslie and Sedo (1996,p. 474):"One initial bout of unemployment that is not productivity based can lay the foundation for continued future unemployment and persistently lower job status even if no future discrimination occurs."

More recently, social scientists have expressed interest in a phenomenon referred to as the' stereotype threat'. This threat is characterised by persistent discrimination which reduces the confidence of the victims and undermines their self-esteem as they begin to believe in their low worth as individuals. This is what Bertrand, *et al*. (2005) call 'implicit discrimination'. In the context of experimental economics, Hoff and Pandey (2006) conducted an experiment in North India wherein children were asked to solve problems. When the children's castes were not revealed to the other participants, the performance by low-caste children was found to be not very different from that of the higher-caste children. Yet, when the castes were publicly announced, the performance by lower-caste children significantly dropped. This suggests that a loss of self-confidence may have played a role in the decline of their performance.

The view that statistical discrimination based on negative stereotypes can discourage the motivation to equip oneself for advancement is also consistent with evidence from India. For example, Jeffery and Jeffery (1997), in their study of the Muslims in Bijnor, argued that many Muslims believed that their relative economic weakness stems from their being excluded from jobs due to the prevalence of discriminatory practices in hiring. The belief that their sons would not get jobs then led the Muslim parents to devalue the importance of education as an instrument of upward economic mobility. It was with these considerations in mind that Myrdal (1944) spoke of the 'vicious circles of cumulative causation'. The failure of the discriminated groups to make progress justifies the prejudicial attitudes of the dominant groups.

3. THE PERSISTENCE OF DISCRIMINATION

The market-based theories of discrimination are unable to explain the *persistence* of discrimination. Taste-based discrimination cannot explain why arbitrage does not eliminate discrimination: employers without discriminatory tastes can have higher profits than those with discriminatory tastes by simply hiring high-productivity labour from the group that is discriminated against. Belief-based discrimination cannot explain why through a Bayesian updating process, posterior experience does not erode prior beliefs and eliminate such discrimination. In order to explain persistence, it is necessary to turn to non-market reasons for discrimination. Market discrimination views discrimination as the result of an impersonal relation between market participants, whereas non-market discrimination emphasises the social nature of transactions.

One form of non-market discrimination concerns the role of friends and acquaintances in securing a 'favourable outcome', such as a job, a loan, a tenant, or admission into an educational institution or hospital, among other things. This signifies the network concept of allocation. Under this concept, who you know determines the chance of a 'favourable outcome' (see Granovetter, 1995; White, 1995).If one applies this to discrimination, 'who you know' (that is, the density of one's network) depends critically on one's group identity. A strong group identity leads to social segregation, while social segregation leads to segregation in economic outcomes. If the groups differ in terms of social and economic strengths, then they differ in terms of their network density, and hence in terms of their chance of a 'favourable outcome'. The main point of this argument is that personal interactions occur throughout the search process and that these are as important, if not more, than impersonal market relationships. Discrimination offers social rewards to the discriminator, the returns for which can be realised in some later reciprocal transaction.

Another reason for the persistence of discriminatory behaviour is the stigma attached to the 'victim' group. The key concept here is the *virtual social identity* based on easily identifiable markings (of race, gender and caste). The identity is 'virtual' because it can differ from a person's actual identity, and it is 'social' because the imputation occurs within a social context. This virtual identity may differ from the person's *actual* identity, which is based on his personal characteristics. *Stigma* occurs when the imputed virtual identity is *dishonourable*, that is, persons who belong to a particular group are seen as being 'flawed' or 'damaged'. Stigmatisation implies more than doubting a person's *productivity*, for it signifies doubting of a person's *humanity* by regarding her/him as a lesser human being than others.

The origins of stigmatisation often lie in a history of dishonour. The stigmatisation of the Blacks in the USA, for instance, has its origins in slavery, which represented the violent domination of 'natally

inferior' persons. Therefore, under this scenario, emancipation through legislation is not enough to overcome the burden of history (see Loury, 2002; Goffman, 1959; Patterson, 1982).Similarly, in the Indian traditional caste system, the untouchables, who are placed at the bottom of the caste hierarchy, suffered from the notion of 'untouchability', which is unique to their caste (the other lower castes do not suffer from untouchability). Due to this stigma of untouchability, the untouchables are believed to be impure and polluting. Hence, they are considered unfit for social association and inter-relation with the castes above them. Such practices have led to their physical and social segregation and isolation. This, in turn, has led them to face denial of various faculties: of freedom; equal opportunities; and of equal civil, social, cultural, religious and economic rights. This has further resulted in denial of equal access to them in various spheres of society, culture and the economy. Thus, their lack of participation in the communal life of the society, which resulted from the original notion of untouchability, is far more comprehensive and widespread insofar as it entails restrictions on their physical and social mobility, which assumes various forms and dimensions (Thorat and Sabharwal, 2010).

4. The Identity-based Theory of Discrimination

Akerlof and Kranton (2010) argue that the existing theories of discrimination (propagated by Becker, 1971; and Arrow, 1972a; 1972b) cannot help us understand why discrimination is so persistent. They developed an identity-based theory of discrimination and, thereby, brought the influence of the social context into economic decisions made by the individuals. The social categories and norms constitute the identity. "People's identity defines who they are—their social category and different norms for behaviour are associated with different social categories. Individual pecuniary and non-pecuniary motivation, and tests and preferences are influenced by the social context and norms. Insofar as the Identity theory brings the social context (that is who they are) and norms (and how should they behave or relate with others) into the realm of economic decision-making by individuals, this has changed the traditional presumption of economists that tests and preferences are individual characteristics, independent of the social context. The identity theory proposed by Akerlof and Kranton maintained that within social categories, there are norms regarding how someone belonging to those social categories should behave, and that these norms affect behaviour. This theory has three main elements as propounded by its promoters below:

"First it associates individuals with a particular social category or identity. Second it specifies the prevailing norms and ideals for these categories. And finally it posits individual gains and losses from different decisions, given identities and corresponding norms. It maintains that identity utility which is

the gain when action conforms to norms and ideals, and loss insofar as they do not .These gains and losses, combined with the standard concerns of economic analysis, will then determine what people do. (Akerlof and Kranton, 2010, pp. 13-20).

In its application to race and poverty, the identity theory explains racial discrimination in terms of what authors call "'oppositional Identity". The behaviour of Whites towards Blacks is determined by different codes or norms, which, in turn, perpetuate a distinction between 'us' and 'them'. Thus, White Americans think of Black Americans as 'them' rather than as 'us' (p. 100). Oppositional identity results in discrimination, which, in turn, explains the poverty of Blacks through a theory of identity, discrimination and Black poverty.

The role of social identity in shaping outcomes in the spheres of work and education has also been extensively discussed by Akerlof and Kranton (2010). They argue that the traditional economic model in which students, as rational decision-makers, weighed the economic costs and benefits of schooling, was flawed because it did not take into account the constraints imposed by the social identities of the children. Using examples from the USA, they show that the social burden of being Black or Hispanic led many children from such groups to under-perform relative to their White peers even within the same school. Consequently, relative to social pressures, the economic returns to education in terms of more pleasant and better-paid jobs could be a weak determinant of the children's efforts at school. The solution for such 'identity-based' problems lies in viewing schools as platforms not just for imparting skills but also for teaching norms of behaviour, and, that by doing so, they become a sanctuary from the dysfunctional world outside their walls.

5. DETECTION OF DISCRIMINATION

There are two main ways of detecting the existence of discrimination—*regression analysis* and *audit studies.* These are discussed in detail below.

5.1 Regression Analysis

In regression analysis, the dependent variable is usually the outcome for persons and the regression equation is 'controlled' by a number of personal characteristic variables that are unrelated to group membership, *plus a group membership variable*. If the coefficient group on the group variable is significant *after controlling for the other non-group variables*, discrimination is said to exist.

However, the regression analysis has some pitfalls that are mainly connected with the equation specification. These are as follows:

1. If the equation is under-specified (that is, the relevant variables are omitted), the extent of discrimination would be over-stated.
2. If the equation is over-specified (that is, the irrelevant variables are included), the extent of discrimination would be over-stated.
3. It is only if one is certain that the equation is *exactly* specified (which one can never be) that one can be sure that discrimination has been correctly identified and measured.

In the regression-based method, a *single* regression was estimated over all persons regardless of the group to which they belonged. The implicit assumption was that all persons (say, Black or White) faced the *same* regression coefficients in the evaluation of their attributes and the *only* coefficient that distinguished the Blacks and the Whites from each other was that of the race variable. This assumption is relaxed by estimating separate equations between the two groups and allowing the existence of different coefficients between them. This raises the following questions.

When we observe a difference in the mean achievement between Whites and Blacks, what is it due to?

1. Is it the result of the superior attributes of the Whites as manifested in relatively more favourable values of the explanatory variables for the Whites as compared to the Blacks?
2. Or, is it due to the superior treatment of the Whites as manifested in relatively more favourable coefficients for the Whites as compared to the Blacks?
3. Or, is it due to some combination of superior attributes and favourable treatment, and if so, can we quantify how much is due to the former and how much to the latter?

Decomposition analysis allows us to answer Question 3 above, that is, to say how much of the overall difference in outcomes between the Whites and the Blacks is due to Question 1 and how much is due to Question 2.

5.2 How Decomposition Works

The problem with the detection of discrimination is that Blacks and Whites differ from each other in terms of both attributes and coefficients. Thus, the first step is to ask what the Black–White difference would have been if both sets of attributes were evaluated at a *common* coefficient vector. This difference could then be entirely ascribed to the difference in attributes since coefficient differences would have been neutralised. We call this the ‘difference due to attributes’.

The 'observed' difference, which is less than the 'difference due to attributes', is the 'residual' or 'unexplained' difference. It is this residual difference that can be interpreted as resulting from discrimination, subject, however, to several caveats set out below (see Oaxaca, 1973; Blinder, 1973).

A recent formal exposition of the Blinder–Oaxaca decomposition method (named after Blinder, 1973, and Oaxaca, 1973) for *linear* regression models is to be found in Jann (2008). Suppose there are two groups, W and B, with Y as an outcome variable such that $E(Y_W)$ and $E(Y_B)$ are the *expected* values of the outcome variable for groups W and B, respectively, then,

$$\mathbf{Y_k} = \mathbf{X_k}'\boldsymbol{\beta}_\mathbf{k} + \boldsymbol{\varepsilon}_\mathbf{k}, k = W, B \tag{1}$$

where, $\mathbf{Y_k}$ is the vector of outcomes, $\mathbf{X_k}$ is the matrix of observations, and $\boldsymbol{\varepsilon}_\mathbf{k}$ is the vector of error terms for persons in group k.

Since, by assumption $E(\boldsymbol{\varepsilon}_\mathbf{k}) = 0$, we have: $E(Y_W) = E(X_W')\beta_W$ and $E(Y_B) = E(X_B')\beta_B$ which implies:

$$\begin{aligned}
&E(Y_W) - E(Y_B) = E(X_W')\beta_W - E(X_B')\beta_B \\
&= E(X_W')\beta_W - E(X_B')\beta_B + E(X_B')\beta_B - E(X_B')\beta_W \\
&= E(X_W - X_B)'\beta_W + E(X_B')(\beta_W - \beta_B) \\
&= E(X_W - X_B)'\beta_W + E(X_W - X_B)'\beta_B - E(X_W - X_B)'\beta_B + E(X_B')(\beta_W - \beta_B) \\
&= E(X_W - X_B)'\beta_B + E(X_B')(\beta_W - \beta_B) + E(X_W - X_B)'(\beta_W - \beta_B) \\
&= P + Q + R
\end{aligned} \tag{2}$$

As Jann (2008) points out: the term $P = E(X_W - X_B)'\beta_B$ in Equation (2), mentioned above, amounts to the difference in mean outcomes, that is due to the inter-group differences in the predictors (the attributes effect); the term $Q = E(X_B')(\beta_W - \beta_B)$ in Equation (2), mentioned above, amounts to the difference in mean outcomes, that is due to the inter-group differences in the coefficients (the coefficients effect); the term, $R = E(X_W - X_B)'(\beta_W - \beta_B)$ amounts to the difference in mean outcomes, that is due to an interaction term representing the fact that the differences in attributes and coefficients exist simultaneously between the two groups.

The decomposition represented in Equation (2) is formulated from the perspective of Group B because the inter-group difference in predictors is weighed by the coefficients of Group B to determine the attributes effect, **P**. The **P** component measures the expected change in Group B's mean outcome if it had Group W's attributes. Similarly, the **Q** component measures the expected change in Group B's mean outcome if Group B had Group W's coefficients.

Needless to say, the decomposition in Equation (2) can also be represented from the perspective of Group **W** as follows:

$$E(X_W - X_B)'\beta_W + E(X_A{}')(\beta_W - \beta_B) + E(X_W - X_B)'(\beta_W - \beta_B) = P' + Q' + R' \quad (3)$$

Now the endowment effect **P′** measures the expected change in Group A's mean outcome, if it had Group B's attributes and the **Q′** component measures the expected change in Group W's mean outcome, if Group W had Group B's coefficients.

As Jann (2008) points out, an alternative decomposition to Equations (2) and (3) is to assume that there is some non-discriminatory coefficient vector, β^*, which should be used to evaluate the contribution of the difference in attributes. Then the outcome difference can be written as follows:

$$\begin{aligned} &E(Y_W) - E(Y_B) = E(X_W{}')\beta_W - E(X_B{}')\beta_B \\ &= E(X_W{}')\beta_W - E(X_B{}')\beta_B + E(X_W{}')\beta^* - E(X_W{}')\beta^* + E(X_B{}')\beta^* - E(X_B{}')\beta^* \\ &= E(X_W - X_B)'\beta^* + \left[E(X_W{}')(\beta_W - \beta^*) + E(X_B{}')(\beta^* - \beta_B) \right] \\ &= U + V \end{aligned} \quad (4)$$

Equation (4) yields a twofold decomposition in which the term $U = E(X_W - X_B)'\beta^*$ is the part of the outcome difference that can be explained by the difference in attributes, and the term $V = E(X_W{}')(\beta_W - \beta^*) + E(X_B{}')(\beta^* - \beta_B)$ is the unexplained part. The latter is usually ascribed to discrimination.

There are two possible variations of Equation (4). First, suppose $\beta^* = \beta_W$, that is, the non-discriminatory coefficient vector is identified as that associated with Group W. Then Equation (4) becomes:

$$R = E(X_W - X_B)'\beta_W + E(X_B{}')(\beta_W - \beta_B) \quad (5)$$

Second and alternatively, suppose $\beta^* = \beta_B$, that is, the non-discriminatory coefficient vector is identified as that associated with Group B. Then Equation (4) becomes:

$$R = E(X_W - X_B)'\beta_B + E(X_A{}')(\beta_W - \beta_B) \quad (6)$$

In Equation (5), the difference in attributes between groups Wand B is evaluated at the Group W's coefficients. In Equation (6), the difference in attributes between Groups W and B is evaluated at the Group B's coefficients.

In general, the problem of defining β^*, the non-discriminatory coefficient vector, is a major issue in the decomposition literature on discrimination. One possibility [as in Equations (5) and (6) mentioned above] is to identify β^* with the coefficients of one of the groups. Another possibility is to regard it as

the average of the two group coefficients (Reimers, 1983): $\beta^* = 0.5 \times \beta_W + 0.5 \times \beta_B$. Yet another (Cotton, 1988) is to weight the coefficients by the size of the groups: $\beta^* = n_W \times \beta_W + n_B \times \beta_B$ where n_W and n_B are the proportions in Groups Wand B.

The analysis of decomposition in linear models can also be extended to non-linear models when a favourable outcome either occurs or does not occur (Borooah and Iyer, 2005). Suppose there are N persons (indexed, *i = 1 . . . N*) who can be placed in K mutually exclusive and collectively exhaustive groups, *k = 1 . . . K,* with each group containing N_k persons. Then, define the variable ENR_i such that $ENR_i = 1$, if the favourable outcome occurs; and $ENR_i = 0$, if it does not. Then, under a logit model, the likelihood of a favourable outcome for a person from Group **k** is as follows:

$$\Pr(ENR_i = 1) = \frac{\exp(\mathbf{X_i^k \beta^k})}{1 + \exp(\mathbf{X_i^k \beta^k})} = F(\mathbf{X_i^k \hat{\beta}^k}) \quad (7)$$

where,

$\mathbf{X_i^k} = \left\{ X_{ij}, j = 1...J \right\}$ represents the vector of observations for person *i* of Group **k**, on **J** variables which determine the likelihood of the favourable outcome.

$\hat{\boldsymbol{\beta}}^{\mathbf{k}} = \left\{ \beta_j^k, j = 1...J \right\}$ is the associated vector of coefficient estimates for persons who belong to Group **k**.

The average probability of a favourable outcome for a person from Group **k** is:

$$\bar{ENR}^k = \bar{P}(\mathbf{X_i^k, \hat{\beta}^k}) = N_k^{-1} \sum_{i=1}^{N_k} F(\mathbf{X_i^k \hat{\beta}^k}) \quad (8)$$

Now for any two groups, say, the Hindu (*k = H*) and the Muslim (*k = M*):

$$\bar{ENR}^H - \bar{ENR}^M = [\bar{P}(\mathbf{X_i^M, \hat{\beta}^H}) - \bar{P}(\mathbf{X_i^M, \hat{\beta}^M})] + [\bar{P}(\mathbf{X_i^H, \hat{\beta}^H}) - \bar{P}(\mathbf{X_i^M, \hat{\beta}^H})] \quad (9)$$

Alternatively:

$$\bar{ENR}^H - \bar{ENR}^M = [\bar{P}(\mathbf{X_i^H, \hat{\beta}^H}) - \bar{P}(\mathbf{X_i^H, \hat{\beta}^M})] + [\bar{P}(\mathbf{X_i^H, \hat{\beta}^M}) - \bar{P}(\mathbf{X_i^M, \hat{\beta}^M})] \quad (10)$$

The first term in the square brackets in Equations (9) and (10) represents the 'response effect'. It is the difference in the average favourable outcome rates between the Hindus and the Muslims that result from inter-community differences in their responses (as exemplified by differences in the

coefficient vectors) to a given vector of attribute values. The second term in the square brackets in Equations (9) and (10) represents the 'attributes effect'. This signifies the difference in the average favourable outcome rates between the Hindus and the Muslims that result from inter-community differences in attributes when these attributes are evaluated by using a common coefficient vector.

For example, in Equation (9), the difference in the sample means is decomposed by asking what the average favourable outcome rates for the Muslims would have been *had they been treated in the same manner as the Hindus*. In Equation (10), it is decomposed by asking what the average favourable outcome rates for the Hindus would have been *had they been treated in the same manner as the Muslims*. In other words, the common coefficient vector used to compute the attribute effect is, for Equation (9), the Hindu vector; and for Equation (10), the Muslim vector.

5.3. Audit Studies

An audit is a matched-pair survey technique that allows researchers to observe how economic agents behave. In an audit study, two equally matched candidates from different groups are sent to accomplish a particular task with respect to a sample of agents, whose behaviour towards the candidates is then observed.

The audit studies avoid many of the pitfalls of regression analysis by equalising many essential characteristics between the candidates. However, they pose their own problems, which can be are delineated as follows (see Yinger, 1998; and Heckman, 1998):

1. There are challenges of both design and management. The unobserved variables signify that all the relevant variables would will not be matched (see Heckman and Siegelman, 1993).The audit refers to a particular stage of the transaction and not to the entire transaction (see Yinger, 1998).It refers to the sample of firms and not to the entire market (see Heckman, 1998).
2. There are problems in interpreting the results in the context of measuring discrimination.

The majority of the audit studies use one of two measures (see Wienk, *et al*., 1979).These are:

1. The gross incidence of unfavourable treatment, which is the share of the audits in which the protected group is treated less favourably.
2. The net incidence of unfavourable treatment, which is the share of the audits in which the protected group is treated *less* favourably, and less the share of audits in which the protected group is treated *more* favourably.

The problem is that the gross and net measures can be far apart. Also, there are problems regarding the net measure as being lower-bound. Lastly, there is the problem of interpreting the net

measure. The net measure shows that protected group members are more likely to encounter unfavourable treatment than members from the dominant group. However, that is not the same as discrimination (see Yinger, 1998).In many cases, audit studies show symmetrical treatments, that is, either both are successful or both are unsuccessful. Thus, it is difficult to know how to interpret the small differences in preferences.

6. MODELLING DISCRIMINATION

The model in this section is adapted from Longhofer and Peters (1998). Suppose that the set of candidates who are looking for a 'favourable outcome' (that is, a job, a loan, or a house to rent) is represented byΩ, where this set can be divided into two mutually exclusive sub-sets: the set of Black candidates (Ω_B) and the set of White candidates (Ω_W). Suppose that $\theta \in [0,1]$ is a measure of candidate 'quality' and f(θ) is the density function of θ across Ω with the cumulative density function. Then,

$$F(z) = \Pr(\theta \le z) = \int_0^z f(\theta) d\theta \tag{11}$$

Where θ^* is the threshold level of quality such that the candidate is awarded the outcome if and only if $\theta \ge \theta^*$. Unfortunately, θ is unobservable and is proxied by an observable signal ρ, where $g(\rho|\theta)$ is the *conditional* density of ρ. If $w(\rho, \theta)$ is the joint density of ρ and θ, then, applying Bayes' Theorem, the *unconditional* density of ρ is:

$$h(\rho) = \int_{\Omega} w(\rho,\theta) d\theta = \int_{\Omega} g(\rho,\theta) f(\theta) d\theta \tag{12}$$

Let $v(\theta|\rho)$ be the conditional density of θ where (again by Bayes' Theorem):

$$v(\theta \mid \rho) = \frac{w(\rho,\theta)}{h(\rho)} = \frac{g(\rho \mid \theta) f(\theta)}{h(\rho)} \tag{13}$$

Then, $v(\theta|\rho)$ is the posterior density of θ and this is arrived at through a Bayesian updating of the *prior* density f(θ). Then the expected value of θ, for a person who emits a signal ρ, is:

$$E(\theta \mid \rho) = \hat{\theta}(\rho) = \int_{\Omega} \theta v(\theta \mid \rho) d\theta = \int_{\Omega} \theta \left[\frac{g(\rho \mid \theta) f(\theta)}{h(\rho)} \right] d\theta \tag{14}$$

The agent then decides to bestow the favourable outcome if $\hat{\theta}(\rho) > \theta^*$.

It is important to stress that the agent is not concerned with the value of ρ*per se* but with what this value implies for the candidate's expected quality, $\hat{\theta}(\rho)$.

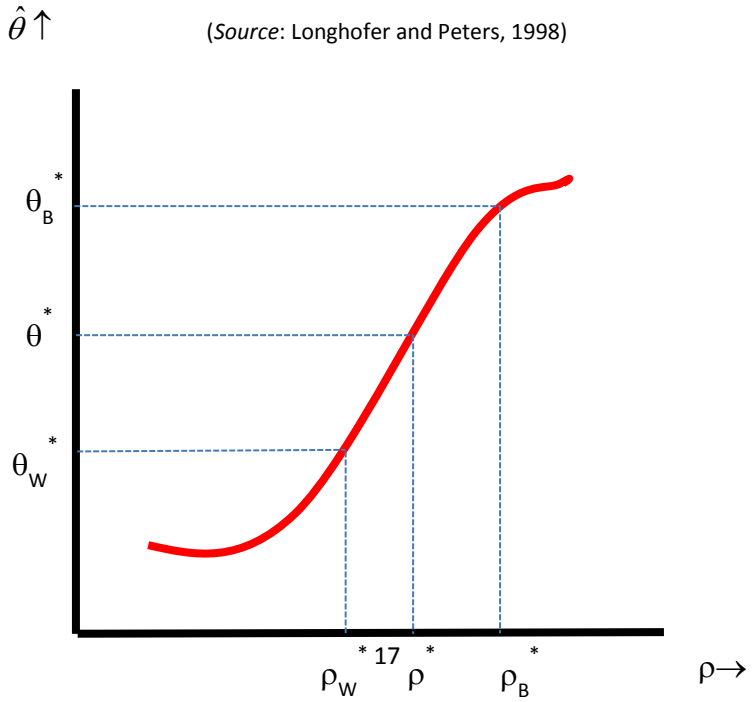
Two assumptions are crucial to the model. They are:

1. $\frac{\partial \hat{\theta}(\rho)}{\partial \rho} > 0$
2. The inverse function: $\rho = \rho(\hat{\theta})$ exists.

In Figure 1, the Blacks are held to a greater threshold standard of compliance (higher) and have to send a stronger threshold signal (higher).This is Becker's model, in which the underlying assumption is that the density *f(θ)* is the same for the Blacks and the Whites but it is the Blacks who are discriminated against.

Figure 1: Beckerian Discrimination

(*Source*: Longhofer and Peters, 1998)



In the belief-based model as shown in Figure 2, the agents are neutral in their preferences between the Blacks and the Whites; but they believe that $f_B(\theta)$ and $f_W(\theta)$ are different so that the average quality is lower for the Blacks than for the Whites. In other words,

$$E(\theta_B) = \int_{\Omega_B} \theta f_B(\theta) d\theta < \int_{\Omega_W} \theta f_W(\theta) d\theta = E(\theta_W)$$

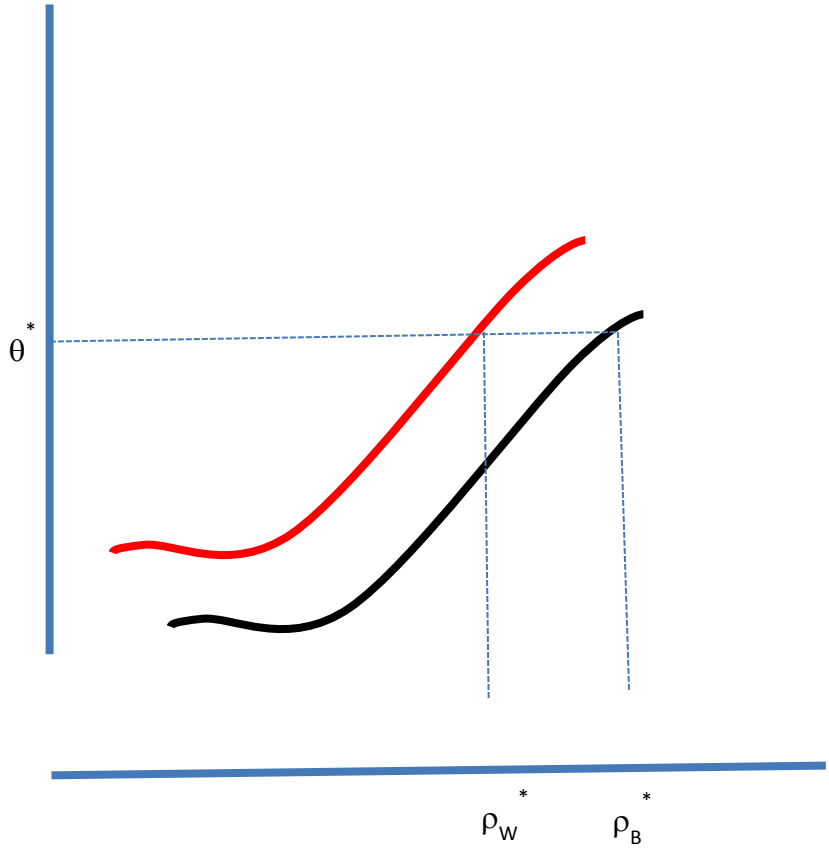
Therefore, if the same signal were applied to the White and the Black applicants, it could yield a lower expected quality for the Blacks than for the Whites:

$$E(\theta_B \mid \rho) = \hat{\theta}_B(\rho) < \hat{\theta}_W(\rho) = E(\theta_W \mid \rho)$$

In Figure 2, the Blacks and the Whites are on the same compliance standard (θ^*) but have to send different signals to meet this standard. The Blacks have to send a stronger signal.

Figure 2: Statistical Discrimination

(*Source*: Longhofer and Peters, 1998)



7. CONCLUSIONS AND POLICY DIRECTIONS

There are two different sets of policies—Equal Opportunities (EO) and Affirmative Action (AA)—in reducing discriminatory bias in hiring. The model developed in the previous section pointed to the fact that a candidate has an underlying, unobservable 'quality', denoted by θ.The greater the value of θ, the 'better' is the candidate. The candidate sends out a signal, **s**, where **s** is a N-component vector: **s** = (s_1….s_N) and **s** is used to obtain an estimate of θ: θ^*=g(s). The quality of θ^* as an estimate of θwould depend upon the correlation between θ^* and θ. In turn, this correlation would depend upon the components of the vector **s**.

The presence of 'irrelevant' components would corrupt the overall signal and weaken the correlation between θ^* and θ. However, the presence of 'irrelevant' signal components is not a matter of chance: *it reflects discriminatory bias*, which is also manifested in, say, questions like: What is your

father's profession? Do you expect to have more children? Who will look after your children while you are at work? These questions reflect a bias against particular groups of persons.

A major role of EO policies is to weed out such irrelevant and/or discriminatory components by making it *illegal* to ask such questions. The entire signal-extraction process is tightly regulated, made transparent, and placed in the public domain. There is a tightly specified procedure for recruitment, ranging from the advertisement to the interview to the appointment of the candidate, with a written record maintained at each stage. Unsuccessful candidates have the right to appeal against 'unfair treatment'. Not only do EO policies attempt to eliminate discriminatory bias by making it illegal, but *EO also builds non-discriminatory policies into the fabric of the human resource management of organisations* by carrying out audits of organisations about their EO outcomes. However, it needs to be emphasised that EO does not imply *affirmative action* because it does not impose quotas or require preferential treatment.

In contrast to EO, AA is concerned with outcomes, not processes. Thus organisations are asked to 'explain' if their employment proportions of 'protected' groups differ significantly from the population proportions. In the absence of a convincing explanation, the difference is presumed to be due to bias. For example, under the US Civil Rights Act of 1991, any employment practice having a 'disparate impact' upon women or minorities is unlawful unless it is predicated by 'business necessity'. The most common way of escaping sanctions under this Act is by having informal quotas in hiring.[3]

The argument in favour of AA is that if there were a pre-legislative bias in hiring, then, prior to legislation, the groups discriminated against would lack the incentive to acquire skills. Hence, AA, by removing this bias, gives these groups the incentive to skill themselves. Furthermore, AA policies provide protected groups a foot on the bottom rung of the ladder. The confidence that this instils creates incentives to acquire the skills to climb the rest of the ladder unaided.

Sowell (2004) observes that while AA policies exist in several countries of the world, in practically every country, they are justified as representing a situation that is unique to that particular country: *inter alia,* the special situation of Maoris in New Zealand, of Scheduled Castes (SCs) and Scheduled Tribes (STs) in India, and of Blacks in the USA. Another feature of AA programmes across the world is that they are purely temporary—as soon the inequality which they address has been righted, these policies would be dismantled.

[3] Of course, one can also escape sanctions by showing 'business necessity' or by showing an absence of the 'disparate effect', the latter most usually by appealing to the skills distribution of the relevant groups.

The third feature of AA policies is that the distinction between the protected and non-protected groups leads to perverse incentives as some members of the non-protected groups seek re-designation as members of the protected groups. In India, for instance, *Gujjars* have, in the state of Rajasthan, sought to be re-classified as members of the STs from their current classification as Other Backward Classes (OBC). As part of the OBC group, *Gujjars* have to compete for jobs and preference with strong well-established groups like the *Meenas* and the *Jats* while, as part of the STs, they would be competing with considerably weaker groups. In the USA, several persons have claimed or tried to claim that they were American Indians while, in Australia, there has been a rush to claim Aboriginal ancestry.[4]

As Sowell (2004) notes, "re-designations of individuals and groups take preferential policies further away from the initial rationales on which they were based. The painful history and continuing oppression of untouchables in India can hardly justify preferential benefits to local majorities in particular states such as Assam, Maharashtra, and Andhra Pradesh." The big danger with AA policies is that they can easily deviate from their original justification, which is to correct historical wrongs, to embrace a "sons of the soil" argument which allows local majorities to claim jobs which should have gone to those who had genuinely suffered.

The fourth feature of AA policies is the attempt to expand affirmative action to embrace groups which, in the original formulation of these policies, were excluded from its purview. The argument put forward is that the original formulation of AA policies was too exiguous in identifying groups that had a history of oppression and hardship and, therefore, they should be expanded to include groups that were wrongly excluded the first time round. The situation of the OBCs in India is a case in point: AA policies which were originally restricted to the SCs and STs were now extended to include members of the OBC. As the Mandal Commission which recommended this extension pointed out:

> *"It may appear the upliftment of Other Backward Classes is part of the larger national problem of the removal of mass poverty. This is only partially correct. The deprivation of OBCs is a very special case of the larger national issue: here the basic question is that of social and educational backwardness and poverty is only a direct consequence of these two crippling caste-based handicaps. As these handicaps are embedded in our social structure, their removal will require*

[4] So much so that there was a 42 per cent increase in the size of the Aboriginal population in Australia between the 1981 and 1986 Censuses (Sowell, 2004).

far-reaching structural changes. No less important will be changes in the perception of the problems of OBCs by the ruling classes of the country."[5]

References

Akerlof, G.A. and Kranton, R.E. (2010), Identity Economics: How Our Identities Shape Our Work, Wages, and Well-Being, Princeton, New Jersey: Princeton University Press.

Arrow, K.J. (1972a), "Models of Job Discrimi¬nation", in A.H. Pascal (ed.), Racial Discrimination in Economic Life, Lexington, Massachusetts: D.C. Heath and Company, pp. 83-102.

Arrow, K.J. (1972b), "Some Mathematical Mod¬els of Race Discrimination in the Labor Market", in A.H. Pascal (ed.), Racial Discrimination in Eco¬nomic Life. Lexington, Massachusetts: D.C. Heath and Company, pp. 187-204.

Arrow, K.J. (1973), "The Theory of Discrimination", in Orley Ashenfelter and Albert Rees (eds), Discrimination in Labor Markets. Princeton, New Jersey: Princeton University Press, pp. 3-33.

Becker, G.S. (1971), The Economics of Discrimination, Second edition, Chicago: University of Chicago Press.

Bertrand, M., D. Chugh, and Mullainathan S. (2005), "Implicit Discrimination", The American Economic Review,95(2): pp. 94-98.

Blinder, A.S. (1973),"Wage Discrimination: Reduced Form and Structural Estimates", Journal of Human Resources, 8: pp. 436-55.

Borooah, V.K. and Iyer, S. (2005), "The Decomposition of Inter-Group Differences in a Logit Model: Extending the Oaxaca–Blinder Approach with an Application to School Enrolment in India", Journal of Economic and Social Measurement, 30: pp. 279-293.

[5]Mandal Commission Report, Vol. I, Chapter XIII, Recommendations, pp. 57-60.

Cotton, J. (1988), 'On the Decomposition of Wage Differentials', Review of Economics and Statistics, 70: pp. 236-43.

Department for International Development (DFID) (2005), Reducing Poverty by Tackling Social Exclusion, DFID Policy Paper, London: Department for International Development.

Elmslie, B. and Sedo, S. (1996), "Discrimination, Social Psychology and Hysteresis in Labor Markets", Journal of Economic Psychology, 17(4): pp. 465-78.

Goffman, E. (1959), The Presentation of Self in Everyday Life, New York: Doubleday.

Granovetter, M. (1995), Getting a Job: A Study of Contacts and Careers, Second edition, Chicago: University of Chicago Press.

Heckman, J.J. and P. Siegelman.P. (1993), "The Urban Institute Audit Studies: Their Methods and Findings", in M. Fix and R.J. Struyk (eds), Clear and Convincing Evidence: Measurement of Discrimination in America, Washington DC: The Urban Institute Press.

Heckman, J.J. (1998), "Detecting Discrimination", The Journal of Economic Perspectives, 12(2): pp. 101-16.

Hoff, K. and Pandey, P. (2006), "Discrimination, Social Identity, and Durable Inequalities", The American Economic Review, 96(2): pp. 206-11.

Jann, B. (2008), "The Blinder–Oaxaca Decomposition for Linear Regression Models", The Stata Journal, 8: pp. 453-79.

Jeffery, R. and Jeffery, P. (1997), Population, Gender and Politics, Cambridge: Cambridge University Press.

Lenoir, R. (1974), Les Exclus: Un Francais sur Dix, Paris: Editions du Seuil.

Longhofer, S.D. and Peters, S.R. (1998), “Beneath the Rhetoric: Clarifying the Debate on Mortgage Lending Discrimination”, Economic Review, IV(2-13): Federal Reserve Bank of Cleveland.

Loury, G.C. (2002), The Anatomy of Racial Inequality, Cambridge (Mass): Harvard University Press.

Lundberg, S. and Startz, R. (2007), “Information and Racial Exclusion”, Journal of Population Economics, 20: pp. 621-42.

Myrdal, G. (1944), An American Dilemma: the Negro Problem and American Democracy, New York: Pantheon.

Oaxaca, R. (1973), “Male–Female Wage Differentials in Urban Labor Markets”, International Economic Review, 14: pp. 693-709.

Oysen, E. (1997). “The Contradictory Concepts of Social Exclusion and Social Inclusion”, in Charles Gore and Jose B. Figueiredo (eds), Social Exclusion and Anti-Poverty Policy, Geneva: International Institute of Labour Studies.

Patterson, O. (1982), Slavery and Social Death, Cambridge (Mass): Harvard University Press.
Phelps, Edmund S. 1972. “The Statistical Theory of Racism and Sexism”, The American Economic Review, 62: pp.659-61.

Reimers, C.W. (1983), “Labour Market Discrimination against Hispanic and Black Men”, Review of Economics and Statistics, 65: pp. 570-79.

Sen, A.K. (2000), Social Exclusion: Concept, Application, and Scrutiny, Social Development Papers No.1, Office of Economic and Social Development, Manila: Asian Development Bank.

Silver, H. (1995), “Reconceptualizing Social Disadvantage: Three Paradigms of Social Exclusion”, in Gerry Rodgers, Charles Gore, and Jose Figueiredo (eds), *Social Exclusion: Rhetoric, Reality, Responses*, Geneva: International Institute for Labour Studies.

Smith, A. (1776), *An Inquiry into the Nature and Causes of the Wealth of Nations*, R.H. Campbell and A.S. Skinner (eds), Oxford: Clarendon Press.

Sowell, T. (2004), *Affirmative Action around the World: An Empirical Study*, New Haven: Yale University Press.

Thorat, S. and Sabharwal, N.S. (2009a), "Caste and Ownership of Private Enterprises", *Economic and Political Weekly*, XLIV(23): pp. 13-16.

Thorat, S. and Sabharwal, N.S. (2009b), "Discrimination and Children's Nutritional Status in India", *Institute of Development Studies Bulletin*, 40(4): pp. 25-29.

Thorat, S. and Sabharwal, N.S. (2010). *Caste and Social Exclusion: Issues Related to Concept, Indicators and Measurement*, IIDS and UNICEF Working Paper Series, 2(01): New Delhi: Indian Institute of Dalit Studies.

White, H.C. (1995), "Social Networks can Resolve Actor Paradoxes in Economics and in Psychology", *Journal of Institutional and Theoretical Economics,* 151: pp. 58-74.

Wienk, R.E., Reid, C.E., Simouson, J.C. and Eggers, F.J. (1979), *Measuring Discrimination in American Housing Markets*, Washington DC: US Department of Housing and Urban Development.

Yinger, J. 1998. "Evidence of Discrimination in Consumer Markets", *The Journal of Economic Perspectives*, 12: pp. 23-40.